

Stewardship Notes

Indiana Division of Forestry



Forest Management Concepts

When you meet with a professional forester to determine forest management objectives for your woodland, the forester may use a bewildering array of technical terms to explain management techniques. A basic understanding of technical forestry terms will help you better understand the management plan for your woodland.

Stand

A stand is a contiguous area of woodland containing trees of similar species, size and age. Stands often correspond to soil or topography types and are strongly influenced by the land-use history of the area.

Basal Area

A way of explaining the crowdedness or density of a stand. The basal area of a tree can be thought of as the surface area of the top of the stump if the tree was cut at 4.5 feet above the ground. The total surface area of all the stump tops in an acre is the basal area per acre.

Basal area measurements are expressed in square feet per acre. In the field, the forester often uses an instrument called a wedge prism to measure basal area. Why not just measure trees per acre to get a handle on stand density? Knowing only the number of trees per acre fails to explain the crowdedness of a stand; a stand of large trees is more crowded than one with the same number of trees of smaller diameter. A basal area for typical mature oak-hickory stands range from 80 to 120 square feet.

The Concept of Basal Area



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Crown Competition Factor

Crown Competition Factor, or CCF, is a measurement indicating how crowded the crowns of the trees in a stand really are. A CCF rating of 100 is given to stands with complete crown closure. A concept related to the CCF is crown cover percent, an estimate of the proportion of land area covered by tree crowns. In the illustration below, the crowns of the trees cover 65% of the acre on which the trees stand.

Stocking

Basal area and the crown competition factor estimate a stand's density, but do not tell us whether that density is too high (overstocked), too low (understocked) or optimal (well stocked) for the management goal. Stocking tells us how efficiently the stand uses the area it occupies. Stocking compares the estimated stand density (usually expressed as basal area per acre) to an ideal density determined by research and the management objectives.

Overstocked stands show slowed growth, interlocking crowns, a reduced understory, loss of crown vigor and even crown die-back, and an increase in tree mortality. Understocked stands produce trees with low-grade lumber, are more susceptible to wind damage, have a heavy brush cover and do not recover as quickly from harvesting operations.

By taking an inventory of your woodland a forester can use a 'stocking chart' to determine the proper stocking for your woods. The optimal stocking will vary with the average stand diameter. Over time, most trees in your woodland will grow in diameter and some will die or be thinned. Also, over time, the basal area will increase.

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